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Regional recreation demand models

by
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The Regional Recreation Demand Model incorporates quantity factors such as the number of campsites and other facilities

"What happens to recreation if...?"

Corps Operations and Planning personnel are often frustrated when asked for information on how recreation use or benefits will be affected by changes in operations or changes in the number of facilities, for example, closings. The droughts a few years ago required changes in the operation of navigation projects. While navigation and water supply benefits were readily available from Corps economists, many Districts had very little or no "hard" information on recreation use or benefits to compare with the navigation or other benefits. Those Districts where recreation use and economic data had been collected were able to predict recreation losses and use that data in making decisions on water level changes.

Regional recreation demand models are intended to provide answers to some of the "What happens to recreation if..." questions by establishing the relationship of demand for recreation to user characteristics and to the quantity or quality of the recreation resources. The models are developed on a regional basis to encompass the Corps reservoirs and also the projects that recreators could use instead of the Corps lakes. The reason for including these substitutes is that recreators have preferences for certain recreation experiences, and if conditions change at a particular Corps project, the user is assumed to choose another project, not necessarily another Corps project. This leads to the term regional model; the model accounts for differences between the projects in a region that a recreator chooses from and predicts visitation for the projects in a region based on the project attributes and user characteristics.

Developing regional recreation demand models

A model to predict recreation visitation at a Corps project must account for project characteristics and visitor characteristics that

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The Regional Recreation Demand Model also incorporates quality factors, such as the quality of fishing, water quality, and other factors that affect the recreation experience

make differences in demand for one project over another project. In the past fifteen years, the Corps has developed data bases that can provide much of the needed information about recreation at Corps projects. The Natural Resources Management System (NRMS) contains information about the facilities and natural resource characteristics. The traffic-stop visitation surveys collected information on the recreation activities and the zip codes of visitors.

The zip codes collected as part of the visitation surveys are important because they make it possible to examine how far visitors are willing to travel to enjoy different recreation opportunities. This visitor origin information will be used to develop regional travel cost models. That is, the regional recreation demand models will be travel cost benefit models developed on a regional basis, incorporating substitutes, rather than benefit models for a single project. While the Corps has information on its own projects, the information about substitute projects resides with the State, local, or other agency responsible for the project. In most cases this information is not as detailed as Corps data.

Developing Corps models

During Fiscal Year 1991, development of three regional models in the Nashville, Little Rock, and Sacramento Districts was begun. These Districts were selected based on:

- Availability of data, for example, visitation survey data.
- Geographic and natural resource variability.
- Ability to adapt or generalize the regional model to other regions or Districts.
- The Corps as the primary recreation provider.

The last of these criteria is to ensure that most of the data used for model development will be from the NRMS and visitation survey data bases, where the limitations, data gaps, and reliabilities are well documented.

Modelling is being done through an Interagency Agreement with the U.S. Department of Agriculture with a university resource economist assigned to each of the three Districts. The work in the three Districts will be coordinated so that model development follows the same process, but with the regional differences addressed. Developing three models will allow comparisons of predictive models for separate regions and will improve the overall ability to understand recreation demand modelling.

Model development to this point has been focused on incorporation of visitation and NRMS data in a single data base and on gathering information on the substitute projects. The next major effort is the modelling of recreation visitation. For each region two models will be developed — a day use model and a camping or overnight model.

Recreation use will be modelled as being determined by a number of independent variables that reflect natural resource, recreation quality, and user characteristics or attributes. The preliminary list of

variables for predicting recreation use includes:

- Reservoir acres.
- Facilities.
- Degree of development along the shoreline.
- Fishing quality.
- Availability of recreation services, for example, marinas.
- Travel time to reservoir.
- Vehicle and other travel costs.
- Costs or fees associated with using the reservoir.
- Per capita income of the recreation market area.
- Age distribution of recreation users.

In developing the models, emphasis will be on documenting model development so a District can go through the same process. In using different predictive variables in the models, the emphasis is on data sources that are already available, not requiring collection of new data for model development. In some cases, variables may be calculated or developed from existing data.

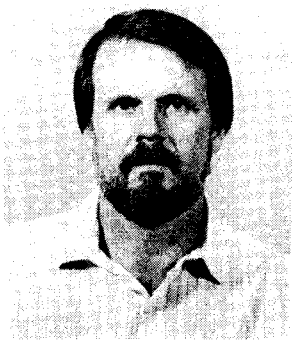
Application of the regional models

Once developed, the regional models can provide answers to the "What if?" questions. Applications fall basically into questions about changes in quantity and changes in quality. Changes in quantity address questions regarding the need for new facilities or the need to rehabilitate or change uses at existing facilities. Questions about quality address the changes resulting from natural resource changes, for example, fishing success, water level changes, imposition of user fees, or other changes affecting the recreation experience.

As with any model, the recreation demand models are limited by availability and quality of data. For instance, water reallocation decisions must relate recreation use for different water levels. If the use-water level information is not available of if the data are not detailed enough, any inferences made from the models will have the same uncertainties as the data.

Schedule

Currently, resource economists are compiling the data outlined above to begin the modelling. Completion of model development for the three regions is scheduled for summer 1993. At that point, decisions on applications, for example, closings or fees, will be made. The applications of the models will be completed by summer 1994. The ultimate product of the work is the development of guidance or Instruction Reports for Districts to apply or adapt the three existing models or to develop new regional demand models.



Jim Henderson *is an environmental planner in the Resource Analysis Group, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station (WES). In addition to the Regional Recreation Demand Model, he is presently involved in work on economic valuation of aquatic plant control programs under the Aquatic Plant Control Research Program, and wetlands valuation work under the Wetlands Research Program. Jim has been at WES for 13 years and has worked on a variety of environmental projects including development of visual impact assessment procedures, documentation of environmental features for streambank protection projects, and development of methods for environmental planning and evaluation.*

Cost-effective refuse management for campgrounds

by
Mike Strickland and Doug Staller
Tom Bevill Resource Office, Tenn-Tom Waterway

The Corps of Engineers' recent focus on recycling has proven to be productive. Those projects who have established successful recycling programs are ahead of the game for several reasons:

- Recycling is a sound environmental practice.
- Operations and maintenance (O&M) costs are continually rising.
- Recent changes in regulations have forced the closing of many local landfills.

The closing of local landfills has forced small communities to join together in regional waste management groups. In many instances, the closures have drastically increased distances from projects to local landfills.

Currently the Tom Bevill Resource Office is constructing a 178-site campground in western Alabama. The county where the campground will be located is planning to close its landfill and join a regional waste management group. We were given the opportunity to consider new options. From the options considered, an innovative method for handling refuse was selected.

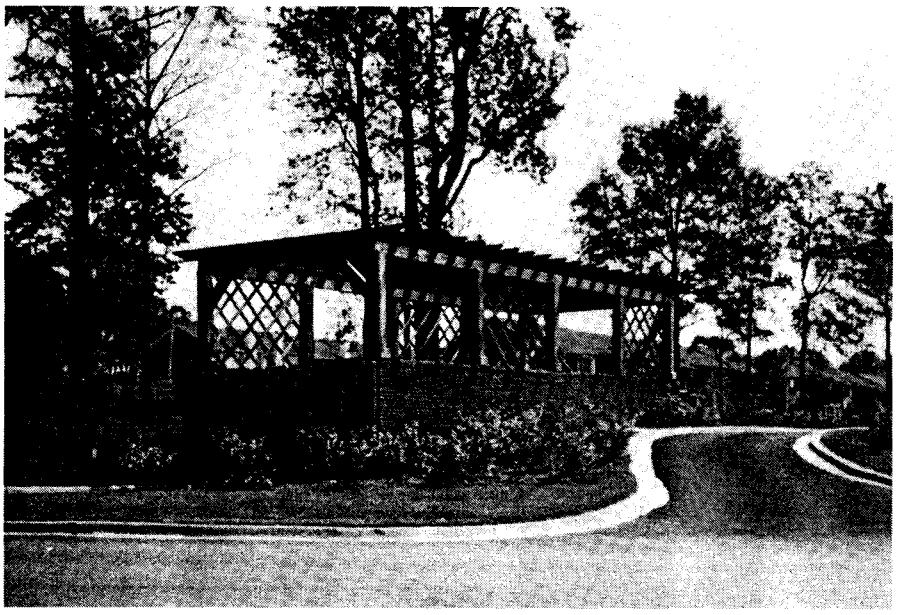
The first option considered was to place trash cans at each site. This option was unacceptable because of its labor-intensive nature as well as the problem of disposal off site. Our O&M contractor would be driving a compactor truck long distances over public roads on a daily basis.

The second option was to place dumpsters throughout the campground and have them serviced on a regular basis. An estimated capacity of 60 cubic yards would be needed for 178 campsites. If ten 6-cubic yard dumpsters were spread throughout the park, the odors would also spread. There would also be the noise and safety hazards of a large collection truck in the campground as well as impact on park roads. This method was not found to be the most cost effective because the dumpsters would have to be serviced on a regular basis regardless of the use they would receive.

The option selected was placement of a compactor unit near the trailer dump station. The compactor unit has a 34-cubic-yard capacity, but will hold six times that volume of loose refuse. It is being placed in an aesthetically pleasing cover and an elevated platform and stairs built to allow campers to deposit garbage easily. Unlike dumpsters, the compactor has a collection vat that will trap liquids and reduce odor. The controls are secured so that the compactor cannot be operated inadvertently.

The compactor is also economical because it is only taken to a landfill when full. During the low-use season, very few trips may be necessary. The cost of using such a unit will be considerably less than dumpsters or individual cans.

Recycling must continue to be a major emphasis in the management of our recreation areas. In concert with recycling, there must be an effort to responsibly and cost effectively manage refuse generated in recreation areas.



Exterior of compactor screen

More research related to the Natural Resources Research Program

The February 1992 *RecNotes* began an effort to provide information to our readers concerning environmental research and development programs related to natural resources being conducted at the U.S. Army Engineer Waterways Experiment Station. The Wetlands Research Program and the Environmental Impact Research Program were featured in the February 1992 issue.

Water Quality Research Program

Assistant Manager: Bob Gunkel, (601) 634-3722

The Water Quality Research Program (WQRP) provides the Corps with new methods and guidance for solving project-related water quality problems. The WQRP has in the past centered interest on water quality problems associated with reservoir projects and reservoir tailwaters. However, the expanded environmental role of the Corps has increased the WQRP's interest in all types of water resource systems (watersheds, reservoirs, regulated streams and rivers, harbors, and coastal/ estuarine).

Research conducted under the WQRP includes developing and demonstrating new techniques in three technology areas:

- Process descriptions: research to increase our understanding of fundamental processes affecting water quality and the biotic structure of aquatic systems.
- Assessment methods: research to develop easy-to-use capabilities for monitoring, analyzing, and modeling water quality data.
- Management strategies: research to develop methods to effectively include water quality considerations with other project purposes.

Current research work units for the WQRP are:

- Sediment-Water Interactions and Contaminant Processes, POC: Doug Gunnison, (601) 634-3873.
- Recreation at Low-Head Projects, POC: Steve Wilhelms, (601) 634-2475.
- Sediment Oxygen Demand (SOD) and Water Quality, POC: Doug Gunnison, (601) 634-3873.
- Hydraulic and Pneumatic Mixers and Aerators in Principle and Practice, POC: Steve Wilhelms, (601) 634-2475.
- Evaluation of Operational Alternatives for Improving Reservoir Water Quality, POC: John Barko, (601) 634-3654.

The effective transfer of technology developed by the WQRP is accomplished through the activities of the Water Operations Technical Support (WOTS) program, POC: Andy Anderson, (601) 634-3657. These activities include technical assistance, technology transfer, and technology maintenance. The transfer of information and techniques developed by the WQRP are achieved through the WOTS Information Exchange Bulletin, workshops, articles, manuals, and videotapes.

The following publications are available from WES:

The *WRP Bulletin* reports on research in the Wetlands Research Program (WRP). To be added to the mailing list, contact Elke Briuer, WRP Technology Transfer Specialist, at (601) 634-2349.

The Environmental Impact Research Program (EIRP) publishes:

- *The Archeological Sites Protection and Preservation Notebook.* Technical notes describe efforts to preserve cultural resources. Contact Dr. Paul Nickens at (601) 634-2380.
- *Support to Cultural Resource Management/Historic Preservation* is a full-color brochure describing capabilities in several areas related to cultural resources. Contact Dr. Roger Saucier at (601) 634-3233.
- *The Water Operations Technical Support (WOTS) Bulletin* describes research in the Corps' Water Quality Research Program. Contact Dr. Andy Anderson at (601) 634-3657 or Bob Gunkel at (601) 634-3722.

John Buffum sits on the dock near where he fell in the water while operating an electric drill; lake level was higher when accident occurred *(photo by Jonas Jordan, Savannah District)*

Corps regulations save man's life

U.S. Army Corps of Engineers regulations saved an Elberton, Georgia, man's life last year.

The Corps, under its shoreline management authority, required that John W. Buffum install a ground fault circuit interrupter on the electrical service running down to his dock in the Pistol Creek Subdivision of J. Strom Thurmond Lake.

"The Corps requires the interrupter for any electrical service on public property near the shore," explained Fred Pless, the Richard B. Russell park ranger who contacted Buffum. "The interrupter acts as a safety feature to trip the breaker in case there's a leakage or variance in voltage."

"When they told me I had to get a ground fault interrupter," said Buffum, "being the fine American that I am, I used some fine American language to describe what I thought about their permit . . . . When I got the electrician's bill for installing the thing, I used some more fine American language."

Then last March when the lake was completely up, Buffum went out on his dock to moor and anchor it.

"I was drilling the dock about 2 or 3 inches over the water with an electric drill," explained Buffum, who works at Elbert County Department of Family and Children's Services. "It's not that I don't have any better sense than that, but being the smart fellow that I am, I knew that nothing was going to happen to me because I was being so very careful. But on the fourth hole, as the drill bit in, it went into the lake and I went with it, tripping the breaker . . . .There was no electrocution, no shock — *nothing*."

Buffman said Corps regulations, ranger enforcement, and the fact that he had the "good sense" to comply with the regulations was what saved his life. And he praised the park rangers for the work they do, "trying to get voluntary compliance in a nonthreatening manner."

The Corps regulation Buffum referred to, Engineering Regulation 1130-2-406, was enacted to

protect and manage shorelines of all civil works water resource development projects under Corps jurisdiction, promote the safe and healthful use of those shorelines by the public, and maintain environmental safeguards to ensure a quality resource.

Regulation 1130-2-406 allows some private uses on government property on lakes constructed prior to 1974 (such as, J. Strom Thurmond and Hartwell Lakes in the Savannah District) and is administered by the resource managers and park rangers at each project. Robert (Bob) Bain, resource manager at the Richard B. Russell Lake, also manages the upper end of J. Strom Thurmond Lake.

"The whole idea behind the program," said Bain, "is that if we, the United States government — Corps of Engineers — are going to allow private facilities on public property at these older lakes, then we have to be very concerned in our management programs that they are maintained in a safe manner. Any unsafe conditions that may exist on any facility that we permit are of major concern and will be corrected as quickly as possible."

"Generally," continued Bain, "people don't want someone telling them what to do with their personal possessions, even though they're on government property. The park rangers try to convince the lot owners that there are reasons for all the regulations, and that this is a good way to spend however much it costs to correct an infraction. Often that's a hard thing to get across until something happens. But if a lot owner wants a facility on government property, then he really needs to comply."

"When you do have a success story where it takes two or three letters and two or three appointments to meet with lot owner," said Bain, "and he corrects the infraction, is appreciative — and everything turns out fine — it's a big boost for the park rangers."

Bain said park rangers who work in shoreline management probably have saved other lives over the years. "We just haven't heard about them," he said. "Mr. Buffum was nice enough to tell his story to us."

(Courtesy: Savannah District Public Affairs Office)

Buffum talks with Richard B. Russell Park Rangers Timothy Justice (left) and Fred Pless on his lot at J. Strom Thurmond Lake *(photo by Jonas Jordan, Savannah District)*

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RESEARCH PROGRAM

Contents	Page

NATURAL RESOURCES RESEARCH PROGRAM

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HQUSACE Natural Resources Management Perspective

Focus on Recreation

As the title indicates, the "focus" of this article is the attention currently being given the Corps recreation program. By now I'm sure you've heard that on April 14, 1992, the State of Kansas suspended negotiations with the Corps on the proposed recreation pilot test. While this may bring the highly visible pilot test to a close, there is no lack of interest in the Corps recreation program. As you know, the recommendations of the Recreation Study are currently being implemented. A status report on all recommendations was sent to the Divisions in January.

More recent news is that the Corps recreation program was discussed by Assistant Secretary of the Army (Civil Works) Nancy Dorn at the National meeting of the Operations, Constructions, and Readiness program in Las Vegas, Nevada, on April 1. I'd like to share some of Ms. Dorn's comments with you. She discussed the Corps recreation program along with a variety of other subjects. The following statements are from my notes on Ms. Dorn's remarks:

> *I think the Recreation Pilot Test is a good idea. It is logical for others to manage adjacent recreation areas. I also think the Corps should be able to charge reasonable recreation fees.*
>
> *Does the Corps want out of Recreation? No. I believe the Corps has a role to play in recreation. However, if we are to meet demand, we need to find a better way of doing business. We can't put more money in recreation with the demands of higher priority programs. There will be no backtracking on Cost / Sharing policy.*
>
> *There is a patchwork of recreation policies. As a result, the Corps' role in recreation is unclear. I'd like to look at recreation in a more broad-brush way as a followup on the Recreation Study. I would like to take a comprehensive look at recreation which would focus on structure and principles.*

Later, at the same meeting, John Elmore, Chief, Operations, Construction, and Readiness Division (my boss), provided his perception of why the administration has taken the position it does on recreation in the Corps. I am paraphrasing John's remarks below:

> *The administration's views are based on roles and responsibilities. Some recreation opportunities are nationally significant and some are regionally significant. The National Park Service draws visitors from the entire Nation, while the Corps appeals primarily to regional populations. Most visitation at Corps recreation areas is in-state.*
>
> *Another issue is cost of operation. In the Recreation Pilot Test, indications were that the state of Kansas could operate recreation at half the cost. Some of the reasons for this discrepancy are within our control. If we don't improve our bottom line, the Corps recreation program (and other Corps programs) will remain at risk. Some managers have not fully supported the recreation fee program. High quality has all too frequently resulted in higher people and money costs. Until we get a better handle on costs, the bottom line will always be an issue lurking out there.*

Finally, I'd like to share with you highlights of remarks made on April 14, 1992, be Ms. Dorn as the featured guest at the American Recreation Coalition's Recreation Exchange, a monthly speaker series

established to foster communication and cooperation between federal, Congressional, and Administration leaders and recreation interests. The following highlights are from the resulting press release:

> *Assistant Secretary of the Army for Civil Works Nancy Dorn dismissed concerns that the Army Corps of Engineers, an agency over which she has responsibility, is no longer involved in recreation. "Our recreation budget is not likely to increase over the next few years, but our recreation programs bring us the most public recognition — we want to enhance them."*
>
> *Assistant Secretary Dorn stated that "the Corps needs to implement a comprehensive recreation strategy at the policy level." "As an agency, we need to take an objective look at what's being done in the field and ask 'why?' In the past, many common-sense ideas, such as establishing user fees for certain benefits at Corps projects or building revenue through state cooperative projects, have been thwarted by Congress or existing policy."*
>
> *Dorn looks forward to working with the recreation community to enhance recreation opportunities on Corps properties and to focusing on other suggestions included in the Recreation Study such as: promoting volunteerism; initiating challenge cost share programs and other cooperative agreements; assisting non-federal partners in generating their own recreation funding or taking over the management of existing areas; expanding fee collection programs; and encouraging private sector involvement in public recreation. "I see nothing wrong with private investment at government facilities as long as the government's and the public's rights are protected," added Dorn. "It is very much in keeping with President Bush's emphasis on partnerships."*

Well, what does all this attention mean to us? I say that it means, as knowledgeable professionals, we've got to participate in any program reviews in a positive, constructive way. We cannot afford to let ourselves get trapped into defending the status quo. We must welcome change and provide quality professional input as we look for ways to improve the Corps' service to the Nation.

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Chief, Natural Resources
Management Branch, HQUSACE